DOCUMENT RESUME

ED 344 389 EC 301 118

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TITLE Community-Based Instruction: Its Origin and Description.
PUB DATE 91
NOTE 20p.; In: Baine, David, Ed. Instructional Environments for Learners Having Severe Handicaps; see EC 301 117.
PUB TYPE Information Analyses (070) -- Guides - Non-Classroom Use (055)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Community Programs; Curriculum; *Disabilities; Educational Cooperation; Elementary Secondary Education; Experiential Learning; Individualized Education Programs; Influences; Instructional Development; Normalization (Handicapped); *Rehabilitation; *Teaching Methods; Teamwork
IDENTIFIERS *Community Based Education

ABSTRACT

This book chapter puts community-based rehabilitation and community-based instruction in an historical perspective by describing a number of influential social, political, legal, technological, and philosophical factors that have shaped contemporary special and regular education. The characteristics of community-based instruction, community-based curricula, and community-based individualized education plans (IEPs) are discussed, as are methods for developing and implementing community-based instruction. Instructional techniques, ecological inventories, discrepancy analyses, and methods for rating the relative importance of skills are reviewed. The paper also discusses practical and logistical issues related to community-based instruction, as well as the need for effective team work among parents, teachers, and therapeutic personnel in establishing and conducting effective, individualized, community-based instruction. Guidelines for community-based research are also discussed. (85 references) (JDD)

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Chapter 2
Community-Based Instruction: Its Origin and Description

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The author begins by putting community-based rehabilitation and community-based instruction in an historical perspective by describing a number of influential social, political, legal, technological, and philosophical factors that have shaped contemporary special and regular education. The characteristics of community-based instruction, community-based curricula, and community-based IEPs are discussed in detail, as are methods for developing and implementing community-based instruction. Instructional techniques, ecological inventories, discrepancy analyses, and methods for rating the relative importance of skills are reviewed. The author also discusses practical and logistical issues related to community-based instruction, as well as the need for effective team work among parents, teachers, and therapeutic personnel in establishing and conducting effective, individualized, community-based instruction. Guidelines for community-based research are also discussed.

Community involvement in rehabilitation has a long history. The best known example is that of Gheel, in Belgium, where, since the fifth century, as a therapeutic measure, citizens have accepted into their homes people with mental illness (Burggraeve, 1867). However, for a long period of time, the concept of community-based intervention in rehabilitation remained an isolated alternative, and usually less humane options have been used that excluded the handicapped from the life of the community, and severely restricted their contacts with nonhandicapped members of society.

Not until the 1980s and 1990s have Community-Based Rehabilitation (CBR) and Community-Based Instruction (CBI) become buzzwords in education and health as methods of service delivery to persons with handicaps. Both of these concepts are closely interrelated; one was coined by health professionals, the other by special educators.

The roots of community-based instruction tap philosophies, trends, and technology, developed and popularized during the last three decades, revitalizing attitudes toward the handicapped, their rights, and their place in society. A number of clearly identifiable factors have contributed to this

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revolution, among them are: (a) the philosophy of normalization (Bank-Mikkelsen, 1969; Wolfensberger, 1972); (b) the emphasis on consumerism; (c) deinstitutionalization; (d) demedicalization; (e) the black and women's civil rights movements; (f) legislation mandating education for all children; (g) international policy statements; (h) the spread of physical and instructional integration; (i) the introduction of community-based rehabilitation in developing countries; (j) the development and spread of behavioral technology and research; (k) better understanding of the nature of the learning process of the handicapped student, and (l) the expressed desire of the handicapped for paid employment, productive work, and independent living in the community. All these factors have contributed directly to radical changes in the manner of thinking about and delivering educational and health services to people with handicaps. A new era in special and regular education has evolved.

The philosophy of normalization, as defined by Bank-Mikkelson (1969), formed the core of society's changing attitudes toward handicapped people by permitting persons with mental handicaps to live in proximity to, and in a manner similar to, the rest of the *normal* population. The emphasis on consumerism in the 1960s enabled persons with handicaps to question existing methods of service delivery and to advocate alternative options. No longer clients, but consumers, people with handicaps gained the right to validate alternative methods of service delivery and to select and use their own options to live independently (Budde & Bachelder, 1986).

The resulting deinstitutionalization, demedicalization, and deprofessionalization allowed educators and paraprofessionals to assume greater responsibility for preparing the individual with handicaps for normalized community living. Low-cost, *user-friendly*, neighborhood rehabilitation schemes emerged and community placement became a primary goal of education, health, and social welfare.

The black and women's civil rights movements also highlighted the lack of civil rights of other minority groups, including persons with severe handicaps. The rights of the handicapped to equality was considerably strengthened and promoted by legislation in the United States, such as Public Law 94-142, the Education for All Handicapped Children Act (Public Law, 94-142, 1975) and its amendments P.L. 99-457, the Education of the Handicapped Amendments Act (Public Law 99-457, 1986), mandating integration of students with severe handicaps with nonhandicapped peers. In Canada, provincial school acts and policy papers advocated education for all and the integration of students with handicaps into the mainstream of school life.

School integration, the placement in age-appropriate neighborhood and community schools and classrooms (Grenot-Scheyer, Coots, & Falvey, 1989), including physical, functional, social and societal integration, is seen as crucial for students to learn to function together and become inter-

dependent and productive members of their community (Voeltz, 1983). The strong commitment during the 1980s toward providing instruction in the most enabling, least restrictive environments resulted from serious concerns about the efficiency of segregated settings. It was apparent that placement decisions were often made on the basis of philosophy and opinion rather than on substantial evidence (Baine, 1990).

Community-Based Rehabilitation (CBR), conceived by the World Health Organization (1982) as part of the program, Health for All by the Year 2000, further demystified the rehabilitation process and linked it to primary health care for handicapped people in developing countries. CBR is based on the political premise that communities must share responsibility for the (re)habilitation of their handicapped members to enable them to participate fully in the life of the community. CBR builds on the resources of the community, including those of people having disabilities. The aim of community-based rehabilitation is to train people having handicaps to adapt to their environments and interact with society as a whole, to facilitate their social integration, and change the attitudes of society toward people having disabilities (Swedish Institute for the Handicapped, 1989).

Two major principles form the basis of CBR: (a) that it is more important to bring about small improvements among the masses than to provide high standards of care for a privileged few, and (b) that paraprofessionals can deliver crucial services (O'Toole, 1989). An experimental manual on rehabilitation and disability prevention for developing countries, written in simple language with illustrations, was published (Helander, Mendis, & Nelson, 1979). The manual had three basic features: (a) focus on community involvement, (b) use of simplified rehabilitation technology, and (c) service delivery (Helander, 1984). The revised edition of the manual is entitled *Training in the Community for People with Disabilities.* The World Health Organization (1982) described CBR as an "effective, feasible and economically viable approach to provide the most essential rehabilitation services" (p. 83) to disabled people who were not otherwise receiving services. The manual is aimed at community-based workers: health care workers, teachers, rehabilitation workers, and so forth. CBR has become part of the grassroots struggle for equal rights and opportunities for the disabled with a high potential for reducing disabling conditions and promoting integration (Nabuzoka, 1991). The strategy was initially tested in nine countries; by 1984, 25 countries had introduced CBR. It was recognized that many existing resources could be mobilized through existing structures to reach the majority of the disabled population.

International policy statements on human rights such as the Rights of the Mentally Retarded (U.N., 1971), and the Rights of Disabled Persons (U.N., 1975) emphasized the right of handicapped people to full participation in their communities. The International Year for Disabled Persons (IYDP) had three main goals: (a) full participation and equality, (b) social

integration, and (c) solidarity, focusing world attention on improving the quality of life for the handicapped. The movement of self-advocacy took on an international character in 1981 when the Disabled People International (DPI) was officially inaugurated.

To accomplish normalization and successful community living, educational techniques were needed to teach necessary adult living skills. Applied behavior analysis provided a finely tuned technology for influencing behavior change, for documenting the impact of intervention, and for assessing individual accomplishments and learning outcomes.

The education of severely handicapped students often consisted of teaching a variety of isolated skills or skill clusters in the hope that these skills would increase the students' independence in various environments (Rainforth & York, 1987). However, these programs had limited success because students having severe handicaps characteristically learn slowly, integrate and generalize information poorly, and forget unused and unreinforced skills (Brown, Ford, et al., 1983; Haring, 1988). In general, the more severe the cognitive handicaps, the less likely students will be able to transfer skills from one environment to another (Brown, Nisbet, et al., 1983). Research has shown that generalization is best achieved when natural teaching cues and reinforcement are used and when target behaviors are taught in the setting in which they will be required (Stokes & Baer, 1977). It has been further demonstrated that students learn more effectively, and maintain and generalize functional skills better when taught with real materials in the actual settings where these skills are to be performed (Storey, Bates, & Hanson, 1984) when compared with training in simulated settings such as classrooms (Nietupski, Hamre-Nietupski, Clancy, & Veerhusen, 1986). Preliminary research supports the effective teaching of functional skills to students having severe handicaps in natural settings, using systematic instruction (Giangreco, 1986).

Community-Based Instruction

Community-based instruction is an educational method providing instruction in the natural environments frequented by students, their families, and by nonhandicapped peers. The approach focuses on the acquisition of functional skills. This method of teaching emphasizes the environment as an important variable in social adaptation (Landesman-Dwyer, Berkson, & Romer, 1979). Normalization of one's environment contributes to the maximization of individual abilities, enhances adaptive functioning in the community, and improves the quality of life (Hull & Thompson, 1980). Community-based instruction is a recognition that community environments provide the most powerful settings for teaching functional skills to severely handicapped students who have difficulty transferring skills from an artificial to a natural environment (Haring, 1988). Community-based instruction allows students to learn the natural consequences of appropriate

and inappropriate behaviors within community environments in order to become active members of their community.

Community-based instruction is built on the following premises.

(a) Persons who have severe/profound disabilities learn better in natural environments than they do in simulated ones (Schalock, 1983).
(b) Institutionalized adults who participate in community experiences will make an easier transition to the community.
(c) With assistance, many elderly and physically handicapped persons can live independently.
(d) Community experiences and community living will assist severely handicapped persons to become contributing members of their community.

What are the Salient Characteristics of Community-Based Instruction?

Community-based instruction is individualized and uses antecedent and consequential teaching procedures to accentuate naturally occurring stimuli to cue student responses. Community environments offer a great variety of natural cues to which students can make correct, incorrect, or no responses. A correct response is strengthened by the naturally occurring consequences. If an incorrect response or no response is made, the teacher intervenes. To minimize incorrect responding, Ford and Mirenda (1984) suggested that teachers adopt the following approach.

(a) Identify errors made in the community environment attributable to failure to respond to natural cues.
(b) Decide whether to allow natural correction to occur; determine whether it endangers the safety of the student and whether it occurs with sufficient magnitude and immediacy to be considered an educationally sound instructional procedure.
(c) Select relevant natural cues and their salient features.
(d) Determine teaching and reinforcement procedures to use in the natural environment.
(e) Fade instructional cues.

Effective community-based instruction utilizes the techniques of behavior analyses with special attention to: stimulus control, reinforcement, fading, shaping, chaining, and evaluation. These procedures, briefly described below, are more fully discussed in Snell (1987), *Systematic instruction of persons with severe handicaps.*

Stimulus control. Stimulus control has been achieved when there is a high probability that a particular response will occur in the presence of a particular antecedent stimulus (Sulzer-Azaroff & Mayer, 1977). Stimulus control is most effective when natural antecedent cues are being used. Teachers identify natural cues and direct student attention to relevant natural stimuli. The selection of natural cues should enhance generalization (Stokes & Baer, 1977). Since most severely handicapped students have

difficulty in selectively attending to relevant and salient visual cues (Krupski, 1979), the salience of the cue may need to be increased (Miller, 1979). Within-stimulus prompting accentuates the critical features of the natural cue (e.g., brightly coloring hot and cold symbols on faucets), while extra-stimulus prompting adds a topographically different cue (e.g., pointing a finger to hot and cold symbols on faucets, Wolf & Cuvo, 1978).

Antecedent teaching procedures involve minimizing the probability of error response (errorless learning, Terrace, 1963) by giving sufficient information in the form of verbal cues, modeling, gestures, or physical prompts to ensure correct responding. Consequential teaching procedures focus on correction once the incorrect response or no response had been made. The *increasing assistance approach* (Csapo, 1981) applies a hierarchy of corrective procedures from natural cue stimuli to full physical assistance. The most frequently used prompting and fading procedure is the least-to-most intrusive prompt hierarchy for each response (Storey et al., 1984). Transfer of stimulus control from instructional to natural cues is usually achieved by reinforcing more and more independent performance.

Reinforcement. If artificial reinforcers are used, nonstigmatizing procedures for dispensing them in the community setting should be employed (Mesaros, 1982). Reinforcers that are natural to the behavior and to the environment in which the behavior occurs have to be identified. Self-reinforcement might be especially suited to community-based instruction.

Fading. Fading involves the gradual decrease of prompting as a student reaches mastery level of performance. Fading may be achieved by increasing the amount of time between natural and instructional cue, and withdrawing of teacher presence.

Shaping. Shaping involves differential reinforcement of successively closer approximations of instructional goals. Shaping is used when: (a) it is not possible to achieve a behavior change directly through instruction; (b) when the required change in behavior (frequency, intensity, duration or topography) is too great to achieve in one step; or (c) when the required change is likely to evoke an aversive response from the learner. Thus, behavior change is made through a series of small steps.

Chaining. Chaining entails analyzing a target behavior into its component parts. The parts are taught and linked together using several different methods for chaining: (a) forward and (b) reverse chaining, and (c) total task presentation.

Evaluation. Finely calibrated data collection techniques, for example precision teaching, allow teachers to monitor the effectiveness of their intervention plans and to make educational decisions based on data.

What are the Major Characteristics of Curricula of Community-Based Instruction?

The source of curricular content and the location for training is provided by the expanded school environment (Hamre-Nietupski, Nietupski, Bates

& Maurer, 1982), rather than the normative developmental sequence (Baine, 1990). Curricula must be individualized, chronologically age-appropriate, functional, ecologically valid, facilitative of the development of the skills necessary for successful participation in a variety of environments shared by nonhandicapped peers, and prepare students for transition from school environments to adult living and work environments (Sailor & Guess, 1983). The instructional focus is on daily, living skills promoting independence and interdependence in an integrated community setting (Brown, Branston, et al., 1979).

The curricular content for individual students, organized in a written Individualized Education Plan (IEP) required by and described in PL 94-142 and several provincial statutes, includes:

(a) the student's current level of performance;
(b) annual educational goals and short-term instructional objectives;
(c) provision of special services and their duration;
(d) the extent to which the student will participate in regular educational programs; and
(e) evaluation procedures to determine the effectiveness of teaching.

To reflect the principles of community-based instruction, Brown et al. (1980) added the following requirements to student IEPs:

(a) provision of opportunities to interact with nonhandicapped peers;
(b) goals and objectives directed toward the performance of chronological age-appropriate functional skills in natural environments;
(c) inclusion of parents in the educational program of their child;
(d) functionally relevant procedures for assessment of existing and needed skill repertoires;
(e) strategies for selecting instructional skills;
(f) description of how several handicapped students might be taught age-appropriate skills; and
(g) clearly articulated performance criteria (p. 202).

Also added to the IEP are ITPs (Individualized Transition Plans) providing instruction of skills needed for transition into adult life. Transition programs teach skills needed by students to function independently in domestic, leisure/recreational, community/mobility, community/consumer, and vocational domains.

When making a curricular decision about functional activities, a number of questions need to be answered.

(a) *What* activities should be taught? Ecological and student repertoire inventories provide the answers.
(b) *Why* should the activity be taught? Reasons for teaching an activity and the potential consequences for not teaching it need to be considered.
(c) *How* should it be taught? Appropriate instructional arrangements (cues, corrections, a hierarchy of reinforcers, and prompting and fading procedures) need to be identified.

(d) *What performance criteria* should be taught? Performance criteria are usually based on latency, rate, and/or duration of responses.
(e) *What materials* should be used? Natural rather than artificial materials should be selected.
(f) *What measurement strategies* should be used? The maximum amount of evaluative information with the least amount of disruption in teaching should be sought (Falvey, 1989).

How to Assign Priority to Curricular Items

Brown, Branston-McClean, et al. (1979) advised that when developing curricular priorities, the following considerations should be made:
(a) information and input from the student and his/her family;
(b) functional nature of the skills;
(c) the number of current and subsequent environments where the skills are needed;
(d) skills that will be used with high frequency;
(e) social significance of the skills;
(f) skills that minimize potential physical harm;
(g) logistical and practical realities and complexities of a skill; and
(h) the chronological age-appropriateness of a skill.

Curricular content is selected from an ecological inventory and task analysis of the functional skills required in present and future residential, home, community, vocational, educational, social, and recreational environments.

Ecological inventory. The ecological inventory, as an assessment tool, attempts to identify: (a) the natural environment where a person lives, works, spends his/her leisure time; (b) the activities that occur in those environments; (c) specific skills required for those activities, and (d) discrepancies between current and targeted performance in skills needed to perform those activities (Brown, Branston, et al., 1979).

Discrepancy analysis. Listing sequentially the skills performed by non-handicapped persons in a given environment helps to determine: (a) the skills needed, (b) the order of those skills and (c) the construction of a criterion-referenced assessment tool against which the performance of the severely handicapped student can be measured. The comparison of the performance of the handicapped student against the skills required in the natural environment indicates missing skills to be targeted for instruction.

Family Involvement

Legislation has recognized parent advocacy and the active role of parents in the process of education of their handicapped children. Families should be encouraged to play an active role; the involvement of family members, parents, and siblings as teachers of functional skills in natural home environments not only helps with the maintenance and generalization of skills taught in schools, but also provides the natural setting for the ac-

quisition of domestic, social and recreational skills (Snell & Beckman-Brindley, 1984).

Behaviors are best taught in the settings and at the times when the students are naturally required to perform them. Utilizing student home environments facilitates learning of many functional skills that assist student's functioning within domestic environments. It has been demonstrated that students with severe handicaps acquire functional skills faster when given direct and systematic instruction in both school and out of school environments (Brown, Ford, et al., 1983).

Given an effective technology, parents have learned to manage the behavior of their children with severe handicaps and reduce the additional stress placed on the family by the conditions related to having a child with severe handicaps.

Successful parent-professional relationships require professionals to recognize that the family is the most committed long-term advocate for the child and that every family can be involved in the education of their child with handicaps. Families have valuable information about their children, information necessary for the development of effective educational programs.

What are the Major Areas of Curricular Content?

Persons with severe handicaps need to learn to control their lives if they are to become independent (Budde & Bachelder, 1986). This control allows individual autonomy and decision-making. The ideal of normalized community living requires the learning of adult independent and interdependent living skills needed for community participation: domestic, vocational, and leisure activities.

Domestic skills. The domestic skills curriculum includes self-help, home and neighborhood skills necessary to participate in all aspects of life, including communication skills and practical sexual knowledge (Eshilian, Haney, & Falvey, 1989). Among these skills, social skills and friendship occupy a primary role.

Social skills. The inability to interact in an appropriate, socially acceptable manner with co-workers and supervisors appears to play a major role in involuntary job termination of persons with moderate and severe handicaps (Agran, Salzberg, & Stowitschek, 1987). It would appear that successful social adjustment in any integrated environment is dependent on an individual's social abilities (Chadsey-Rusch, 1986).

Stainback and Stainback (1987) listed the following areas for a basic social skills curriculum:

(a) positive interaction style;
(b) getting the message across;
(c) being reinforcing to others;
(d) initiating thoughtful actions;
(e) being a good listener;

(f) sharing belongings and feelings;
(g) having similar likes and dislikes;
(h) taking the perspectives of others, and
(i) being trustworthy and loyal.

Fostering of friendships between individuals with and without handicaps may facilitate social, psychological, and sociological adjustment. Falvey (1989) listed the following reasons for promoting such friendships:

(a) opportunity to develop, practice, and maintain and receive natural reinforcement for a variety of communicative, cognitive, and social-emotional skills (Field, 1984);
(b) nurturance and support (Berndt & Perry, 1986);
(c) maladjustment in later years is correlated with lack of developing ties with peer groups, and
(d) through friendship, attitudes toward the full integration of the handicapped into the community might be positively influenced (Strully & Strully, 1985).

When instruction occurs in school environments that are used by nonhandicapped peers, the acquisition of social skills, chronological age-appropriate behaviors, and the development of friendships (Certo, Haring, & York, 1984) is greatly facilitated. Furthermore, generalization is promoted in a variety of natural environments, environments that are frequented by nonhandicapped peers (Sailor & Guess, 1983).

Language programming. Independent living relies on successful communication. The philosophy of normalization highlights the need for the provision of language systems to facilitate natural and fluent communication and the acquisition of environmentally cued spontaneous language. Significant progress in teaching the form and structure of language has been made by applying techniques of behavior analysis; however, learners often fail to use the language skills spontaneously and functionally when they acquire them in artificial environments (Halle, 1987). Emphasis should be placed on training in the context where spontaneous language is supposed to occur, in *talking* environments.

When assessing communication skills the following skill areas are observed and carefully analyzed:

(a) receptive understanding;
(b) expressive communication behaviors;
(c) cognitive understanding;
(d) communication functions;
(e) interaction skills;
(f) physical, motor and sensory skills;
(g) augmentative and alternative communication models, and
(h) gestures: common forms of nonverbal communication, and manual signing.

Leisure and recreational skills. When making curricular decisions about chronological age-appropriate leisure skills, the same general questions

about the choice of functional activities need to be answered as in any other area of the curriculum. Plans for generalization of these skills to natural environments have to be developed (Schleien & Larsen, 1986). A student's current skill repertoire of leisure/recreation activities needs to be assessed, compared, and analyzed in relation to the skills of nonhandicapped peers. Learning to access local recreational facilities used by nonhandicapped peers is a necessary step for participation. Learning and practicing chronological age-appropriate leisure activities that involve interactions with nonhandicapped peers is expected to promote the development of friendships.

Employment. Employment is an implied outcome of public education (Wirth, 1983). Employment is often a prerequisite for acceptance of adults in contemporary societies (Bishop & Falvey, 1989). For many young adults with severe handicaps, employment was not an expectation or possibility (Everson & Moon, 1987). Critical employment variables for people with severe handicaps are the same as for nonhandicapped workers: attitude, ability, and the degree of skill performance required for a given job (Kelley & Simon, 1969). To prepare a severely handicapped student for employment, training must begin as early as possible in a student's education. Supported employment is a viable option with job coaching, that is, individualized training at the job site.

Before a decision is made about the type of work to be selected, a functional assessment (job match process) is required:

(a) describing overt skills;
(b) inferring underlying abilities;
(c) predicting future performance;
(d) suggesting instructional strategies; and
(e) determining individual preferences.

Work-place analyses consist of work-site orientation and job-site analysis. The work-site orientation assists the teacher to identify career information about formal and informal policies, practices, and personnel of the business as a whole. The job analysis seeks answers to the following questions:

(a) what the job is;
(b) how it is typically done;
(c) why it is done;
(d) who is involved in doing it, and
(e) what skills and equipment it takes to do it.

Job accommodation can be achieved by: (a) creating a position better suited to a specific individual; (b) altering student characteristics; (c) providing prosthetic devices; or (d) adapting the activity or the environment. Activity adaptation, alterations in the process but not the outcome, may involve altering (a) the sequence skills; (b) the method of performing the activity; (c) the length of time needed for the activity; (d) job descriptions; and (e) provision of aids. Environmental adaptations may include

changing physical characteristics and effecting attitude changes (Falvey et al., 1979).

Rusch and Mithaug (1980) concluded that preparatory vocational training in simulated work environments and with simulated materials does not necessarily prepare a person with severe handicaps for successful functioning in the work-place. Job coaching, training on the work site, and in-vivo training using natural cues, materials, and reinforcement are advocated. There is growing evidence that training severely handicapped persons in community work settings leads to gainful employment, equitable wages, and routine social interaction with nonhandicapped workers (Karan et al., 1986).

The Need for Effective Team-Work

Integration of therapy and community-based instruction promotes the participation of family, various members of the community, special educators, and related services personnel in planning, service delivery, and creating an effective framework within which students can learn successfully (Rainforth & York, 1987). For teamwork to succeed, team members are reminded of the fundamental principles.

(a) All goals and objectives belong to the learner, rather than to individual team members.
(b) All team members are responsible for contributing information and skills that will maximize learner success in accomplishing the goals and objectives.
(c) Each team member has specialized disciplinary methods and skills, many of which can be taught to other team members.
(d) Combining methods from a variety of disciplines allows all team members to address the needs of learners more successfully and in more natural contexts.
(e) Individually selected, meaningful activities are the logical and necessary focus around which team members identify and integrate effective instructional methods for each learner (Rainforth & York, 1987).

Often the integration of related services personnel in IEP development and implementation is limited by poor preservice preparation for teamwork. As a result, stress and logistical problems occur. The integration of the expertise of all team members increases the probability of successful skill acquisition.

Examples of procedures that apply to a community-based team approach.

(a) Conducting an inventory of the environment; one team member investigates; other members review the completed inventory.
(b) Assessing the student; one team member conducts the assessment and observes the student's performance in the community environment; the environmental inventory is used as a criterion-referenced assessment forming the basis for ongoing community instruction.

(c) Establishing priorities for instructional objectives; high ranking objectives become the target of initial instruction within an environment. Each IEP contains instructional objectives that apply to a variety of natural environments.
(d) Developing instructional programs; instructional procedures specify the antecedents, desired learner performance, consequences and data-based evaluation strategies.
(e) Selecting an instructor—usually the teacher.
(f) Exchanging information and skills among team members.
(g) Evaluating and modifying the instructional program (reviewing the data, observation of performance, and hands-on interaction with student).

Flexible scheduling enables related service personnel to participate in designing communication among all staff (Rainforth & York, 1987).

Practical and Logistical Issues Related to Community-Based Instruction.

A number of issues need to be addressed with regard to community-based instruction.

(a) Trained teaching and support personnel to work with developmentally disabled adults and children is a growing concern (Fifield & Smith, 1985). Most of the service is delivered by paraprofessionals who are often poorly paid and poorly trained (Schalock, 1983).
(b) There is a need for financial support for community training. Transportation might be costly and time-consuming, leaving insufficient time for traditional academic skill instruction.
(c) Physical access to various parts of the community requires modifications, often beyond the control of teachers.
(d) Liability insurance and safety issues need to be addressed.
(e) The labor-intensive nature of the instruction, which often relies on a small pupil-teacher ratio (1:1 to 1:4), necessitates innovative ways of meeting staffing needs.
(f) Mobility issues for the nonmobile or those with an extensive motor involvement is a special concern (Snell & Browder, 1986).
(g) The natural community environment might be too complex for early skill acquisition which may require a simplified environment for successful learning.
(h) Inappropriate behaviors exhibited in the community may result in stigmatization (Hamre-Nietupski et al., 1982). Ford and Mirenda (1984) expressed concerns over a potentially negative public response to training minimally skilled individuals in public places. Full support of parents, teachers, and administrators is needed for the effective use of this method.

Need for Research in Community-Based Instruction

Community-based instruction has been effective in teaching receptive language skills to individuals with profound mental retardation; skill generalization has been encouraging (Phillips, Reid, Korabex, & Hursh, 1988). The approach has also been succesful teaching use of public transportation (Welch, Nietupski, & Hamre-Nietupski, 1985); crossing the street (Matson, 1980); buying skills (Gaule, Nietupski, & Certo, 1985); laundromat skills (McDonnell & McFarland, 1988) and a number of job-related skills.

Snell and Browder (1986) pointed to a number of outstanding issues in community-based instruction that are in need of further research, among them:

(a) development of methods to adapt community-based instruction models to rural settings where the community boundaries are more diffuse and nearby commercial areas may not be present;
(b) delineation of the variables influencing the provision of related services within the community-based instructional model (occupational, physical, and speech therapy);
(c) investigation of techniques to improve experimental control and accuracy in measurement and treatment fidelity despite the unintended variance in procedures that may occur in community settings;
(d) development of strategies to safeguard students taught in the community against the increased possibility for natural hazards and social stigma;
(e) comparing various methods of task analyses and their effect on learning while also socially validating the resulting performance;
(f) determining the most effective serial chaining process; and
(g) conducting comparative research to demonstrate the best schedule for warm-up of repetitive trials and error correction.

Research on parent intervention with severely handicapped children needs to focus on: (a) the impact of the family, (b) pre- and post-intervention effects of problem behavior, (c) selection of random subjects, (d) definition of cost-effectiveness, (e) precise procedures of training, and (f) the generalized effects of the intervention on the child as a family member (Snell & Berkman-Brindly, 1984).

Guidelines for community-referenced research. Community-based instruction removes the distinction between researcher, teacher, and other practitioners as good empirical research becomes part and parcel of good instructional practice. Snell and Browder (1986) suggested the following guidelines for the design of community-referenced research having persons with severe handicaps as subjects.

(a) Define the skill selection process used.
(b) Ensure that the skills targeted have both social and empirical validity.
(c) Justify the process used to analyze the skill into teachable behaviors and to order the task for instruction.

(d) Describe and justify the procedures used to present and sequence training trials.
(e) Include a means for teaching the difficult steps.
(f) Incorporate into the reinforcement prompting and error correction methods that yield a high proportion of correct responses, that are socially valid in the community, that have some correspondence to the natural stimuli in the community, and that can be faded.
(g) Measure the targeted skills under realistic, noninstructional conditions in the criterion setting, while also ensuring the client's safety.
(h) Measure the targeted skills frequently enough before, during, and after intervention to draw conclusions about the functional relationship between the intervention and corresponding changes in the behavior, but not so often that learning is impaired.
(i) Identify and measure collateral behavior so that intervention may be expanded or reduced as necessary.
(j) Use and describe measurement and intervention procedures that can be replicated or adapted by a teacher, knowledgable of data-based instruction.
(k) Demonstrate generalization to criterion settings or train in those settings and at those times for which the target skills are intended (p. 8).

Discussion

Community-based instruction is a topic of growing interest in the education of persons with severe handicaps in industrialized countries (Phillips et al., 1988). This method of educational intervention effectively complements the focus of current policies on placing and maintaining persons having developmental disabilities in the community in order to lead a normal life, with required environmental support. Increased life expectancy in developed countries has resulted in an increase of older persons with handicaps (Chornoby & Harvey, 1988). Consequently, they also require community-based instruction to enable them to participate in community living. Access to a variety of structured residential settings are available for these persons (Hauber, Rotegard, & Bruininks, 1985). Community-based instruction may expand their opportunities in community living such as owning or renting homes, and improve their access to community recreational activities, work, and socialization opportunities by removing existing barriers imposed by lack of effective learning opportunities in natural environments.

The changes in educational philosophy and service delivery challenge teachers to increase their creative role in their community and to explore fully all that the natural environment has to offer to assist effective learning. Using empirical methods of experimental analyses of behavior, instruction becomes applied research, finely calibrated to the needs of learners with severe handicaps. These students learn more effectively, that is, acquire, maintain, and generalize functional tasks when taught directly in

the way these tasks must ultimately be performed in actual settings with real materials (Storey et al., 1984) than they do in simulated learning situations in classrooms (Nietupski et al., 1986). Combinations of *individualized, specialized, integrated, and community-based* instruction may be required by individual students in different proportions at different times, depending on the stage of learning, the nature of the skill taught, and the effectiveness of instruction (Baine, 1990). Community-based instruction may be used as an alternative or adjunct to classroom instruction (Baine, 1990).

"Experts" in health care, rehabilitation and education, for many years, have placed restrictions and limitations on their own expectations of what severely handicapped persons can do, can learn, and to what degree they can contribute and participate in the life of the community. The number of these restrictions is declining as the result of changes in professional and public attitudes and national and international policy statements on human rights in many parts of the world. However, these changes are still far from reality in most countries (Thorburn, 1989).

Community-based instruction is an effective technique to prepare severely handicapped learners for successful independent and interdependent membership in the community.

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